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Composting Food and Yard Waste: A Guide for Individuals, Non-Profits, and the City of Buffalo

Abstract

In 2010, the United States added 68 million tons of food and yard waste to landfills, accounting for roughly 34% of all municipal solid waste. Lowering the amount of this waste in a city's garbage saves the taxpayers money and protects the environment. Composting is an easy and inexpensive solution. Instead of throwing out food and yard waste, homeowners, not-for-profits, businesses and local government can reuse it to create compost, a useful product that can be incorporated back into the soil.

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Rebecca Mize
October 11, 2012

How Does Composting Help the Environment?

In 2010, the United States added 68 million tons of food and yard waste to landfills, accounting for roughly 34% of all municipal solid waste.¹ Lowering the amount of this waste in a city's garbage saves the taxpayers money and protects the environment. Composting is an easy and inexpensive solution.² Instead of throwing out food and yard waste, homeowners, not-for-profits, businesses and local government can reuse it to create compost, a useful product that can be incorporated back into the soil.^{3,4}

Food and yard waste buried in landfills harms the environment. Food in landfills decomposes in the absence of air; this process produces methane, a powerful greenhouse gas that is 21 times more potent than carbon dioxide emissions.⁵ If methane is not controlled at a landfill, it can seep underground and into nearby buildings where it has the potential to explode. Yard waste also contributes acidity that can make other waste constituents more mobile and therefore more toxic.⁶

Composting with Food and Yard Waste

Composting speeds up the natural process of decomposition to transform food and yard waste materials into a new material that can be incorporated back into the soil.⁷ Compost improves soil structure and texture, increases the soil's ability to hold both water and air, enhances soil fertility, and stimulates healthy root development in plants.



Individuals, businesses and government agencies all benefit from creating compost. Composting saves money because adding it to a garden can eliminate the need to buy chemical fertilizers or compost. Businesses use compost

and mulch for decorative purposes at properties, golf courses, and sports fields. Public agencies use compost for landscaping parks, recreational areas, and other public property and remediating contaminated or eroded sites. Homeowners use compost to enrich gardens, improve the soil around trees and shrubs, and as protective mulch for trees and shrubs.⁸

Reusing Food and Yard Waste at Home

At home, individuals can reuse food and yard waste to create compost, mulch, and grass fertilizer. We offer a step-by-step guide for creating home compost, and then discuss “grasscycling” and mulching.

Home Composting

Home composting converts small quantities of organic materials such as yard trimmings and food scraps into compost that can be spread in garden beds, under shrubs, or as potting soil for outdoor plants.⁹ Starting a compost pile is as easy as dedicating a small part of a backyard or an indoor container for food scraps and yard wastes and following a few easy steps.

Step 1: Designate a Compost Pile or Bin

Outdoor composting starts with a pile in the backyard or a composting bin. It’s best to pick a dry, shady, or partly shady spot near a water source. Chicken wire or a box made of scrap wood pieces are inexpensive ways to give a backyard compost pile some structure. Many stores, such as Urban Roots (428 Rhode Island St., Buffalo), offer indoor and outdoor containers to compost food or yard waste; options include closed top bins with turning units, staking bins, and bins with flip tops.¹⁰

Lack of yard space and winter weather are not barriers to composting.¹¹ Balcony composting can be as easy as using a stationary plastic bin.¹² Vermicomposting, the use of worms to create compost, is a good option for indoor or balcony composting. Use a large waterproof bin, fill it with compostable material and then add a pound of redworms to the bin. A pound of red worms can eat up to ½ pound of kitchen wastes each day.¹³ Vermicomposting requires less space than normal composting methods, and is therefore ideal for classrooms, apartments, and high-density urban areas.

Step 2: Add Compostable Materials: “Greens” and “Browns”

Material	“Greens”	“Browns”
Yard Waste	Wet: green plants, garden trimmings, fresh leaves, flowers and grass	Dry plant material, fall leaves, twigs, straw, pine needs, potting soil
Food Waste	Fruit and vegetable scraps, coffee grounds, and tea bags	Bread and grains, egg shells, nutshells, stale beans, flour and spices
Other		Paper, cardboard, newspaper

Getting the right mix of ingredients is essential. It requires mixing roughly equal parts, by volume, of “green” (nitrogen- rich) and “brown” (carbon-rich) materials. Add “brown” and “green” in alternate layers.¹⁴ Without enough “greens” the pile will decompose too

slowly; without enough “browns,” the pile may develop an unpleasant odor. It’s better to err on the side of too many browns than on too many “greens.”¹⁵

Step 3: Maintaining Compost: Water and Oxygen

Compost needs oxygen and water to decompose materials. A good rule of thumb is to aerate the compost each time something new is added. To provide oxygen, stir the materials using a pitchfork or shovel, mixing the compost from top to bottom.¹⁶

Water transports nutrients and organic matter throughout a compost pile, keeping the pile from becoming stagnant. To determine how much water to add, make sure material is as moist as a wrung-out sponge – moist to the touch, but yielding no liquid when squeezed.¹⁷

Step 4: Finished Compost

The process takes about three to six months to finish. You can use the “baggie test” to see if compost is finished. Take a sample of compost and filter out any large chunks. Place the compost into a small plastic sandwich bag and store in a drawer. After a few days, open the bag. If the material inside stinks, then the compost is not yet mature; the materials are still breaking down and have switched to anaerobic decomposition because there is not enough oxygen, thus creating the stench. But if the contents of the baggie smell like fresh, rich compost, then your compost is finished.¹⁸

Avoiding Pests

Several simple precautions will avoid attracting pests like flies and rats. Meat, bones and dairy products should not be included in the backyard

composting bin; protein-rich and fatty foods are magnet pests.¹⁹ Second, pests are also drawn to exposed food, so be sure to bury food scraps 6-12 inches deep in the pile and cover them with browns. Keep your compost bin’s lid fastened, weighted down or tied down with bungee cords. Line the bottom of the bin with mesh wire if you suspect rodents are entering from underneath the bin. If fruit flies are attracted to your indoor food scraps container (where you store food scraps indoors before you toss them in the outdoor bin), make sure you’re using an airtight container, with a tight-fitting lid that fully seals shut.²⁰



Leave it On the Lawn

Another way to use yard waste is grasscycling – leaving your clippings on the lawn as a fertilizer. Currently, the City of Buffalo sends much of its yard waste to the landfill – typically it sends separate trucks to take yard waste for mulching or composting only several times a year. But city residents do not have to throw out grass clippings.²¹ Instead, residents can let them decompose naturally and return nutrients and moisture to the soil. It’s easy: just remove your mower’s bagging attachment and leave the clippings on the lawn.²²

Other Uses for Yard Waste – Mulching

Mulches are made from recycled plant materials, such as compost, yard waste, leaves or chipped woody materials like tree branches and Christmas trees. Mulch reduces evaporation from the soil surface, keeps down weeds, and stabilizes soil temperature. Organic mulches feed the soil and provide ideal conditions for earthworms and other organisms necessary for healthy soil.²³ Make your own mulch from your yard waste and spread it around individual plants or entire garden beds.

Community Composting

The City of Buffalo has seen an increase in the number of urban gardens run by neighborhood groups and not-for-profit organizations. Some organizations already have made strides to decrease the amount of food and yard waste by composting. These programs are already in place, so they are good models to expand upon and replicate.



Massachusetts Avenue Project and Community Action of Erie County both run urban farms in Buffalo and create their own compost.²⁴ Urban Roots is a community garden store that hosts workshops on home composting and also sells

compost bins.²⁵

Buffalo boasts roughly one hundred community gardens and urban farms that could benefit from free compost. Creating more special events and more drop off sites for food and yard waste would allow individuals who may not be interested in home composting to participate and also help to educate the public on the benefits of composting.

Bicycle Compost Pick Up

Several cities have implemented bicycle-powered home compost pickup.²⁶ There are many benefits to the bicycle compost pick-up. A common concern about expanding recycling programs is the cost of purchasing and operating large trucks that are used to transport recyclable materials for composting. These trucks also cause large amounts of air pollution and greenhouse gas emissions. Bicycles, by contrast, can be an inexpensive green option that creates more jobs than truck-based systems.

These programs operate by using bicycles with a trailer of about six feet attached. The bicyclists drive to homes that are signed up for the service and dump the bin of compostable material into a bin on their trailer. Then, the food waste collected is transported to a nearby compost facility – perhaps on an urban farm, or perhaps at another location dedicated for composting.

Eureka Recycling, a not-for-profit focusing on zero-waste in the Twin Cities of Saint Paul and Minneapolis, has implemented several composting initiatives, include helping individuals, restaurants, and schools compost



by hosting events, offering education, and providing pickup.²⁷ Eureka Recycling employs workers who ride on their bikes to two pilot neighborhoods to pick up the compostables. At the start of the program, residents are told what materials can be included in the food waste pickup. They are told to place the materials in a bin with a lid. On their garbage and recycling pickup day, they place the bin outside on the curb. If the workers find that a resident has left out some waste that is not compostable, then they leave a friendly note.

Goshen Recycling is another cycle-powered, curbside recycling pick-up service that combines a necessary city service with fair wage work for people with low incomes. The people hired to service our routes are outfitted with bicycles towing eight-foot long trailers designed to carry recycling in recycling bins to the recycling drop-off centers located around

Goshen. Routes are serviced year round.²⁸ In addition, participants are rewarded with fresh compost soil once they have recycled a certain amount of food waste.

There are other areas implementing this program as well. In Troy, NY two not-for-profits – an urban farm and a bicycle reuse project – are working together to start a bicycle-powered compost pick up. They are looking to employ workers from low-income community by teaching them to repair a used bicycle that they will use to pick up food waste to bring back to the urban farm. This is an excellent opportunity for two existing not-for-profits to work together and address a need.

City Composting Policies: Education

The City of Buffalo can save money by increasing composting. Buffalo pays \$43 per ton to tip its garbage, much of which is composed of food and yard waste.²⁹ Nearly 100 cities now have curbside composting, led by San Francisco, which currently collects 600 tons of yard and food waste every day.³⁰

For cities not ready to take the plunge into curbside composting, a public awareness campaign may be a cheaper but still effective way to encourage residents, schools, and businesses to use food and yard waste to create compost.

Outreach does not have to be expensive. Websites and social media can serve as a important resource for composting. For example, St. Paul dedicates a website to waste reduction and information to help citizens recycle.³¹ A proper outreach website would

include resources on the benefits of composting, how to compost, and where to go for more information. In addition the website could provide information on classes, workshops, and resources for community groups.³²

Businesses and individuals need to be informed about the benefits of reducing food and yard waste. Residents should be informed that source reduction presents cost savings opportunities as well as larger environmental benefits. It reduces the collection and processing costs of handling yard trimmings at a large-scale composting facility. Using food and yard waste as compost also provides a fertilizer and thus saves residents out-of-pocket expenses.

Local governments can educate businesses about how source reduction can give them a competitive advantage through lower costs for purchasing, processing, and storage of products and disposal of waste. The Environmental

Protection Agency provides an excel worksheet for businesses and organizations to calculate their waste and what will help them reduce costs. This information, and other assistance, can be provided on the city's website.³³ The city can draw positive attention to businesses that reduce waste through award or recognition programs.

There are a number of ways to provide education to residents and organizations: promotional materials, workshops, and community compost events. NYC Compost Project's website is a great resource for promotional materials. The materials are easy to follow and informative.³⁴ Promotional materials include an online composting guide that provides links to everything needed to start and maintain a compost pile for individuals and organizations. The site also includes discounted compost bins to get individuals started on their project.

¹ <http://www.epa.gov/osw/nonhaz/municipal/index.htm>

² www.epa.gov/wastes/conserve/rrr/greenscapes/pubs/compost-guide.pdf

³ <http://greenliving.nationalgeographic.com/much-waste-can-save-composting-20359.html>

⁴ <http://greenliving.nationalgeographic.com/much-waste-can-save-composting-20359.html>

⁵ www.epa.gov/wastes/conserve/rrr/greenscapes/pubs/compost-guide.pdf

⁶ www.epa.gov/waste/conserve/rrr/composting/questions.htm

⁷ epa.gov

⁸ id.

⁹ epa.gov/waste/conserve/rrr/composting/by_compost.htm

¹⁰ www.epa.gov/wastes/conserve/rrr/greenscapes/pubs/compost-guide.pdf

¹¹ <http://greenliving.nationalgeographic.com/compost-during-winter-months-20092.html>

¹² <http://www.goveganic.net/veganic-agriculture/Plant-based-techniques/compost/article/balcony-compost-diy->

[guide](#)

¹³ [http://earth911.com/news/2012/01/26/your-guide-to-winter-composting/;](http://earth911.com/news/2012/01/26/your-guide-to-winter-composting/)

<http://greenliving.nationalgeographic.com/compost-during-winter-months-20092.html>

¹⁴ id.

¹⁵ www.nyc.gov/html/nycwasteless/downloads/pdf/materials/whattocompost.pdf

¹⁶ <http://earth911.com/recycling/garden/give-compost-a-chance-start-your-own-pile/>

¹⁷ www.epa.gov/waste/conserve/rrr/composting/basic.htm

¹⁸ <http://earth911.com/news/2012/05/09/how-to-make-top-notch-compost-for-your-garden/2/>

¹⁹ <http://earth911.com/news/2011/10/07/how-to-troubleshoot-your-compost-pile/>

²⁰ Id.

²¹ www.nyc.gov/html/nycwasteless/downloads/pdf/materials/lawn.pdf

²² natural lawn carenyc

²³ www.nyc.gov/html/nycwasteless/downloads/pdf/materials/

als/tipsheet-mulch.pdf

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²⁵E-mail/Personal Communication, Patti Jablonski, Urban Roots,
²⁶ Non-profit: cityslickerfarms, org (oakland); For-profit: bootstrapcompost.com (Boston).
²⁷ makedirtnotwaste.org

²⁸http://crbp.org/index.php?option=com_content&view=article&id=46

²⁹ <http://www.ppgbuffalo.org/wp-content/uploads/2010/06/Environment.pdf>

³⁰ Elizabeth Daigneau, “Curbside Composting Added to a Major City: Is it Yours?” Governing, February 2012.

³¹ <http://www.stpaul.gov/index.aspx?NID=3794>

³² www.epa.gov/waste/conserve/rrr/composting/backyard.htm

³³ <http://infohouse.p2ric.org/ref/24/23792.pdf>.

³⁴ <http://www.nyc.gov/html/nycwasteless>

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